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ABSTRACT

This study examined the ability of young children to correct comprehension errors, considered to be an aspect of comprehension monitoring. Kindergartners and second graders (N=32) heard a story about an unfamiliar situation, then answered questions which either assessed information contained within a single sentence, required the correct identification of the referent of a word, or depended on the integration of information across sentences. Initially, both groups responded to reference questions best, though second graders answered more questions correctly overall. Participants were then given the opportunity to listen to the story again to see if they could identify information needed to correct their previous responses. Second graders corrected nearly half of their errors, kindergarteners, more than a third of theirs. Thus these young children exhibited some ability to improve their comprehension when given a means to do so. Integration questions were least likely to be corrected, however. Young children may thus have difficulty organizing and relating information from different parts of a passage. (Author/JMB)

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The Ability of Young Children to Correct Comprehension Errors: An Aspect of Comprehension Monitoring

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Abstract

This study examined the ability of young children to correct comprehension errors, considered to be an aspect of comprehension monitoring. Kindergartners and second graders heard a story about an unfamiliar situation, then answered questions which either assessed information contained within a single sentence, required the correct identification of the referent of a word, or depended on the integration of information across sentences. Initially, both groups responded to reference questions best, though second graders answered more questions correctly overall. Participants were then given the opportunity to listen to the story again to see if they could identify information needed to correct their previous responses. Second graders corrected nearly half of their errors, kindergartners, more than a third of theirs. Thus these young children exhibited some ability to improve their comprehension when given a means to do so. Integration questions were least likely to be corrected, however. Young children may thus have difficulty organizing and relating information from different parts of a passage.

The Ability of Young Children to Correct Comprehension Errors:
An Aspect of Comprehension Monitoring

By now, existing research has impressively demonstrated that use of existing knowledge is an important component of text comprehension and that such knowledge significantly influences how passages are processed and understood. Such findings have been obtained with adults (e.g., Anderson, Reynolds, Schallert, & Goetz, 1977; Anderson, Spiro, & Anderson, 1978; Thorndyke, 1977), and, to a somewhat lesser extent, with school children (Brown, Smiley, Day, Townsend, & Lawton, 1977; Pace, 1978). World knowledge alone, however, is insufficient for most comprehension tasks. One reason is that prose passages normally contain some information which is beyond the personal experience of a reader or listener or is in some other sense "new." Although a passage that is too far removed from a person's experience may literally be incomprehensible, one that is too redundant with existing knowledge is likely to be, at best, uninteresting and certainly could not serve well the purpose of either entertainment or knowledge acquisition. Secondly, exclusive reliance on existing knowledge may actually interfere with accurate comprehension in that it may bias interpretations or prevent detection of text information inconsistent with what a person already knows. Some experimental evidence (Pace, Note 1; Spiro & Tirre, 1979) indicates that both individual differences and developmental factors may influence the ability to detect such text-knowledge incompatibilities. In addition, adequate comprehension of passages containing experientially new information seems to require comprehension skills more complex and developmentally advanced

than the use of existing knowledge alone (Pace, 1978). In a sense, comprehension of texts about known events may simply involve the rather effortless or automatic utilization of already highly organized knowledge structures ("schemata," "scripts") and not reveal much sensitivity to passage information itself.

One candidate skill for the successful comprehension of passages containing new or unfamiliar information is the ability to monitor, in some way, one's degree of ongoing comprehension and to employ effective means to enhance understanding when needed. Markman (Note 2) has delineated cogently factors which may be involved in comprehension monitoring and has suggested how they may influence comprehension. In her own work (Markman, 1977, 1979), she has demonstrated significant developmental differences in children's awareness of their own degree of understanding of game instructions and stories. Other recent studies show that adults (Baker, Anderson, Standiford, & Radin, Note 3), as well as children (Wimmer, Note 4; Winograd & Johnston, 1980), may experience difficulty detecting inconsistencies embedded in texts, suggesting, as Markman (Note 2) has proposed, that comprehension monitoring or metacomprehension may be multi-faceted and involve degrees of awareness.

Pace (1978) showed that older elementary-school students, as compared with younger children, had better comprehension of stories about events previously determined to be unfamiliar to them, more often realized that they had means of their own to improve comprehension, were more likely to suggest that they listen to a story again to correct responses to comprehension questions, and, once they did so, they were better able to respond appropriately. Thus, students in upper elementary grades would seem to be

better monitors of their own comprehension than children in lower grades. In this study, however, participants who did not request that they hear the story again were not given the opportunity to make corrections. Consequently, it could not be determined whether younger children would be able to improve their comprehension scores by identifying appropriate passage information if they were given a chance to do so.

The present investigation was designed to address the question of whether kindergartners and second graders would be able to correct comprehension errors whether or not they requested to hear a difficult story over again. One possibility is that younger children may not spontaneously think of a relistening strategy, but when provided with a means to correct responses, can do so. Second graders should be better able to do so than kindergartners. On the other hand, successful comprehension and comprehension monitoring may also involve the ability to recognize information that can improve comprehension. Children may have difficulty assessing their own degree of understanding because they have little idea of what adequate comprehension involves. Therefore, failure to find a difference in the ability to correct responses between those children who suggested that they relisten and those who did not might indicate that knowledge of an appropriate strategy alone is not sufficient to improve comprehension.

Another requirement for successful text comprehension is the ability to integrate information across sentences in a passage, as Baker (1979) and Markman (Note 2) have maintained. Understanding of sentences in isolation may not be adequate for comprehension of coherent texts. An additional reason younger children may experience difficulty comprehending passages about unfamiliar topics is that they may not perform such integration well.

Therefore, the present study utilized comprehension questions which could be answered on the basis of information within single sentences or in contiguous sentences and others which required integration of information across sentences. Integration questions were expected to be the most difficult.

Hypotheses of this investigation, then, were that second graders would be better able to correct comprehension errors than kindergartners, no difference in this ability would occur between those children who suggested a relistening strategy and those who did not, and that questions which required integration of information across sentences would be more difficult both to answer initially and to correct than those which did not.

Method

Materials

To assess children's ability to comprehend a passage about an unknown situation, a narrative story was used which concerned a situation - making lye soap -- which had been shown previously (Pace, 1978) to be unfamiliar to elementary-school children. This story was recorded on a cassette tape by an adult female. The text of this story is provided in Appendix A. Nine comprehension questions were composed for this passage. Three questions concerned information contained within single sentences, three required the correct identification of the referent of a word, and answers for the remaining three depended on the integration of information across sentences within the text. These comprehension questions are listed in Appendix B.

Participants and Procedure

Participants were 16 children each (8 girls and 8 boys) from kindergarten

and second grade in an urban area of North Carolina; each child was seen individually by the investigator. All children were told that they would hear a story that would probably be difficult and then be asked some questions about it; however, they would hear it twice and they could ask questions. Following the second playing of the story, each participant was asked the comprehension questions. An invariant order was used since these questions were sequenced according to the events in the story. After this initial questioning, the participants -- none obtained a perfect score -- were asked whether they knew of a way they could then find answers to questions they did not know or could not remember (other than asking the investigator). An appropriate reply would be that they could listen to the story again. A sequence of three questions was used to try to elicit this response. If it was not given, the investigator told the participant that this could be done. In either case, each question to be corrected was read two times and then the story tape was replayed. When the student thought that he or she knew the correct answer, the experimenter was to be told, the tape stopped, and the answer provided. This procedure was followed for every incorrect response.

Results

Data Source

To measure initial comprehension of the story before relistening, scores for the number of correct responses for each type of question were obtained. Whether a participant suggested hearing the story again or not was also noted. For each student, the proportion of all questions corrected after relistening was indicated, as well as the proportion corrected for each type of question.

Analyses

Comprehension scores before relistening were submitted to a 2 (grade) x 3 (question-type) analysis of variance. The main effects of both grade, F (1,60) = 13.54, $p < .0005$, and question type, F (2,60) = 23.70, $p < .0001$, were significant, although the interaction between these two factors was not. As before (Pace, 1978), second graders answered significantly more questions correctly than kindergartners, although overall performance for both groups was low, with the mean number correct for kindergartners 1.8, and that for second graders, 3.2. Post hoc comparisons, tested at the .01 level with the Newman-Keuls procedure, showed that participants answered best those questions probing knowledge of referents. Scores on questions requiring integration of information were the lowest, though they did not differ significantly from scores on the within-sentence questions.

Only five of the sixteen kindergartners knew that they could relisten to the story to correct errors in comprehension; by comparison, only one of the second graders failed to suggest this possibility. These results are similar to, though somewhat better than, those obtained previously (Pace, 1978) for the same grade levels. A one-tailed t-test, however, revealed that kindergartners who suggested relistening did not correct a significantly higher proportion of their responses than those who did not do so. Another t-test, though, showed that second graders corrected a significantly greater proportion of their comprehension questions (48%) than kindergartners (38%). At both grade levels, a smaller proportion of the integration questions were corrected than that of either of the other question types. The number and proportion of each kind of question corrected by students in both grades are shown in Table 1. Kindergartners and second

graders corrected similar proportions of integration and referent questions; however, second graders corrected a greater proportion of the single-sentence questions (nearly 80%) than kindergartners (50%).

Discussion

These results reemphasize the difficulty experienced by younger elementary children in comprehending stories about unfamiliar situations or experiences. Importantly, however, this study has shown that children as young as kindergarten-age can correct responses to comprehension questions when provided with a means to do so. Even though few of these kindergartners spontaneously suggested a procedure by which they could find answers to questions they did not know, they were able to benefit from listening again to a recorded story to identify information needed to answer questions about it. In this way, they corrected about half of their responses to two of the three kinds of questions employed. Interestingly, awareness of an appropriate correction strategy provided no advantage to these younger children, nor, apparently, was it necessary. Those kindergartners who proposed relistening performed no better than the others. However, performance was affected by the type of question asked. Less than one-fourth of the questions requiring integration of information across sentences were corrected by either kindergartners or second graders. These children seemingly have difficulty organizing and relating information from different parts of a passage, a result comparable to that obtained by Frase (1972) with a different kind of task. One reason this pattern may occur is that young children may not remember information from one part of a passage well enough to relate it to information in another part. Inability to remember such information, however, itself reflects inadequate discourse processing skills. An efficient way to

remember information from various parts of a passage would be to organize it into some kind of integrated framework, such as a thematic macro-structure (van Dijk, 1977a, 1977b), but this apparently is what these young children are not able to do.

Further examination of the kinds of questions students were either able to answer appropriately at first or subsequently able to correct reveals some suggestive patterns. The questions that were easiest for these children to answer initially were not those that depended primarily on the identification and integration of new information, but those that required recognition of the correct referent of a word, either a pronoun ("it") or synonymous noun. Such words are among those elements which tie a discourse together in the sense of providing inter-sentence connections (Halliday & Hasan, 1976; van Dijk, 1977a). Children in early elementary grades, then, may acquire the ability to utilize such discourse features before they can successfully integrate information about unfamiliar topics. Additionally, second graders were better able than kindergartners to correct questions dealing with information contained within single sentences. By second grade, perhaps through reading instruction, children have acquired some skill at identifying intra-sentential information in response to specific questions.

A complex set of cognitive and metacognitive abilities may be required for the successful comprehension of prose passages that concern events unknown to elementary-school children. Some of the skills, at least, appear to be relatively late acquisitions developmentally and may even be induced by the experience of schooling itself. This study, as well as further work aimed at identifying what these abilities may be and how and when they

become manifest during the elementary-school years should help both researchers and educators gain a clear understanding of the functioning of school children of different ages, provide more realistic sets of expectations for children's performance on various school-related tasks, and help to indicate what kind of comprehension monitoring skills or strategies might usefully be taught and when.

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Table 1

Number and Proportion of Questions Corrected by Students in Each Grade

	Kindergarten		Second Grade	
Question Type	Number Corrected	Proportion	Number Corrected	Proportion
Single-sentence	20 (of 40)	.50	26 (of 33)	.788
Reference	14 (of 29)	.483	10 (of 22)	.455
Integration	10 (of 46)	.217	9 (of 38)	.237
Total	44	.383	45	.484

Note: The number of questions of each type needing correction at each grade level is shown in parentheses.

APPENDIX A

Making Lye Soap

Mr. and Mrs. Green like homemade things. They make their own soap from meat grease and lye. Lye can be bought at a store, but Mr. and Mrs. Green make it themselves. It is a strong liquid that can burn you if you get it on you. Lye is made from the ashes of hardwood trees, such as maple or white oak. Mr. Green puts ashes from this wood in something called an ash hopper. The ash hopper is wide at the top, but very narrow at the bottom. Then Mr. Green pours water into the hopper. The water goes through the ashes and drips out of the narrow bottom of the hopper into a pan. Mr. Green keeps pouring this liquid through the ashes until it is strong enough to be called "lye." After that, Mrs. Green puts the lye and the meat grease into a big pot, mixes them, and heats them over a wood fire for about thirty minutes. She must keep stirring this mixture while it is heating. When it has cooked long enough, Mr. Green helps her pour this "liquid soap" into a large, flat pan. They let it cool in the pan overnight. Some people use little bar-shaped molds instead of a big pan. When the soap is cool, the Greens cut it into little bars which are white to yellow in color. The soap is then ready to use for washing.

APPENDIX B

Story Questions

1. (A)* What two things are used to make homemade soap?
2. (B) What is "lye"?
3. (A) What does an ash hopper look like?
4. (C) How did Mr. Green make lye?
5. (A) How long does Mrs. Green heat the lye and meat grease?
6. (B) What does Mrs. Green do to the lye and meat grease while they are being heated?
7. (C) What is the "liquid soap" that Mrs. Green pours into a pan?
8. (B) What cools in the pan overnight?
9. (C) How do the Greens make soap from the lye and meat grease?

* (A) = Single-sentence questions; (B) = Reference questions; (C) = Integration questions.